# THE OAKS (*QUERCUS*) DESCRIBED BY NEE (1801), AND BY HUMBOLDT & BONPLAND (1809), WITH COMMENTS ON RELATED SPECIES[1]

by

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CONTRIBUTIONS FROM THE UNIVERSITY OF MICHIGAN HERBARIUM
Volume 9, No. 7, pp. 507–522, 2 figures in the text

University Herbarium, University of Michigan
Ann Arbor, Michigan
1972

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[1]Published with aid from the National Science Foundation, Washington, D.C.

The American oaks were revised in 1924 by William Trelease, who recognized a total of 371 species in addition to numerous named varieties and forms. Since 1924 many additional species have been described, mostly by Trelease himself or with Muller, by Muller alone, or by E. F. Warburg.[1] In our opinion the number of species described is much larger than the actual number, which we suppose cannot exceed 250. The greatest concentration of oaks in America is in central and southern Mexico, where there are perhaps 100–125 species.

Because relatively few specimens of oaks are collected with flowers or fruits, descriptions in the literature (including those of supposedly new species), have often been based primarily on sterile specimens consisting of small leafy twigs. This has compounded the problem for the general taxonomist, because oaks with few exceptions are highly variable in leaf-form. In some species entire, sinuate, sharply serrate and lobed leaves may be found on different parts of the same plant, or the leaves may vary from one plant to another according to the exposure of a particular twig or the rate at which it is growing. Leaf-form in itself is not a good criterion of differences between species, but must be interpreted in the light of correlated characters of pubescence, venation, epidermis, petiole, and, of course, flowers and fruit if these are known. Few Mexican species are adequately known in flowering or fruiting condition; most descriptions of flowers, acorns and cups have been based on woefully inadequate samples. Collectors often take acorns and cups from beneath a tree, assuming that they have come from that particular plant when, in fact, they have sometimes come from a plant of another species.

From the standpoint of nomenclature, also, the Mexican oaks have been a source of frustration to botanists. Paradoxically enough, this is partly because many of the common species were studied and described very early in the history of Mexican botany. Later authors, even up into the present century, have on numerous occasions described the same species under different names, either because they have been unable to consult the types of the earlier authors, or because they have been misled by differences in geographical range or minor variations in leaf-morphology. For these and other reasons a large synonymy has grown up, and we think it desirable to publish a series of observations dealing primarily with the identities of the approximately 36 species described in the two earliest treatments of Mexican oaks, namely those of Née and Bonpland, in 1801 and 1809, respectively.

Luis Née, a naturalized Spaniard of French birth, spent 5 years as a member of the Malaspina Expedition, during which time he travelled and botanized in southern and western South America, Mexico, and also in the Philippines and elsewhere in the southwest Pacific.[2] He was in Mexico from April to December, 1791, crossing the mountains between Acapulco and Mexico City, then visiting the mining districts of Hidalgo and Guanajuato. With a party in charge of Antonio Pineda (the chief naturalist of the expedition), Née left Acapulco on 8 May 1791, and reached Chilpancingo on the 13th. After a side-trip to Tixtla and the caves of Omiapa, they continued through

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[1]Plantae Hintonianae: X. The genus *Quercus*. Kew Bull. 1939: 84–95. 1939.

[2]Apparently little has been published about the life of Née, even including his connection with the Malaspina Expedition. Lasègue (Mus. Bot. Benj. Deless., p. 451–452. 1845) describes his travels briefly. Colmeiro (Bot. Penín. Hisp.-Lus., p. 183. 1858) describes Née's botanical activities in Spain from 1780 to 1784, implying that the year of his birth must have been about 1760 or before. He returned to Spain in September 1794 with large collections of plants, paintings and manuscripts. He himself published very little except for one paper on oaks; Colmeiro says he was temperamentally better suited to the life of an explorer than to the quiet life of a writer.

Zumpango (21 May) and on to México. The party stayed in México until after the middle of August, when they set out for Pachuca and the mines of Real del Monte. They continued via Ixmiquilpan, Zimapan and Tecozautla to Querétaro, thence to Acámbaro (October 10) and finally to Guanajuato. After a week in that city the party returned to México by way of San Miguel el Grande, Chichimequillas, San Juan del Río (9 November), Tepejí del Río and Tlalnepantla. The naturalists then returned to Acapulco to join the main body of the Malaspina Expedition, by way of Amecameca, Puebla (28 November), San Juan Calmecatitlán, Mistepeque, Acatlán, Chilapa and Petaquillas, reaching the coast early in December, 1791.[1]

Née's article on *Quercus*, entitled *Descripciones de varias especies nuevas de encina* (Quercus *de Linneo*), was published in Anales de Ciencias Naturales (Madrid), volume 3, pp. 260–278 (1801), and was translated into English and reprinted under the title *Description of several new Species of Oak, from the Spanish of don Luis Née,* in the Annals of Botany, volume 2, pp. 98–111 (1806). Née proposed a total of 16 names for as many species, 14 of which he had encountered during his Mexican travels, and 2 of which he knew from Californian material received from other Spanish explorers. His descriptions were good (extraordinarily good, for his time), and one can usually identify his species from the descriptions alone, if the type-locality is taken into consideration. Of the names he proposed, all are now in use except three (*Q. circinata, Q. lutea* and *Q. macrophylla* are treated as synonyms of *Q. magnoliifolia*).

Née's original specimens, including what we take to be the types of all the species he described, are preserved in the herbarium of the Instituto Botánico 'A. J. Cavanilles,' Madrid (MA), where Muller studied them in August, 1950, and again in July, 1958 and May, 1964. It transpired that all Née's species could be satisfactorily typified on the basis of his own specimens, especially in the light of recent collections from near the type-localities. Trelease, in the preparation of his monograph, was unable to consult Née's specimens. He remarked on this as follows:

"A series of excellent and seemingly accurate pencil sketches made from these types about 50 years ago under the direction of Professor Lange for use in Liebmann's illustration of the group has shown much about the specimens, and a partial set of cotypes apparently, labelled as from Pavon, occurs in the Boissier herbarium at Geneva; but some of the Née species are still questionable, and these unfortunately are inadequately represented by types even at Madrid."

Trelease was correct in assuming that the sketches were carefully and accurately done, but in themselves they were not always enough to make clear the identities of the species they represented. Née's specimens included several with juvenile leaves and otherwise atypical leaf-forms, and these are not always identifiable from their outlines nor from the original descriptions. The "Pavon" specimens to which Trelease referred are still to be found in the herbarium of the Conservatoire Botanique at Geneva. It is now known that Pavón sold many thousand specimens to Boissier and other collectors, and that these sets included primarily the South American collections of Ruiz and Pavón, and the collections made by the Botanical Expedition to New Spain, i.e. mostly by the botanists Sessé and Mociño. It is possible that Pavón also sold some of Née's collections, but the evidence seems to be against this. Pavón wrote to Philip Barker Webb, for example, in 1826, that he could not send him duplicates of Née's plants, for they were securely in control of the Jardín Botánico.[2] The labels on the specimens at Geneva are inconclusive, but at least one bears an original label with the words "Ex Tixtla" in what seems to be the handwriting of Sessé.[3] A field-party of the Royal

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[1]Most of the above is derived from *Scientific aspects of Spanish exploration in New Spain during the late eighteenth century,* by Iris Higbie Wilson (Ph.D. dissertation, Univ. of Southern California, pp. ix, 330. 1962).

[2]Quoted by Arthur Robert Steele, *Flowers for the King,* p. 314. Duke University Press, 1964.

[3]For a copy of this label we are indebted to Dr. C. E. B. Bonner.

Botanical Expedition to New Spain, including the Director, Martín de Sessé, was in Tixtla and other nearby localities in Guerrero, during the summer of 1789, and could easily have collected this particular specimen. Specimens of *Quercus* labelled by Pavón with the letters "N.E." [for "Nueva España"] are to be found not only in Geneva but also in Florence and perhaps in other European herbaria, and we suppose that most of them represent collections made by Sessé & Mociño, not by Née. In any event they are to be interpreted with caution.

Alexander von Humboldt (1769–1859) and Aimé Bonpland (1773–1858) travelled in Mexico in 1803.[1] Like Née, they passed over the road from Acapulco to Mexico (March 27–April 11); they visited the mines around Pachuca and Actopan (May–June); in August and September they went to Guanajuato from México by way of Tula, Querétaro, and Salamanca; returning from Guanajuato they came by way of Valladolid (now Morelia) and the Volcán de Jorullo (19 September), then back to Morelia and to México by way of Acámbaro, Maravatio, Ixtlahuaca and Toluca. They worked in and near Mexico City until 20 January 1804, when they began their descent to Veracruz via Puebla and Jalapa. On their return to Europe they began publication of the botanical results of Humboldt's "Voyage" with the two sumptuous folio volumes called *Plantes Equinoxiales* (or in the more familiar Latin form, *Plantae Aequinoctiales*). The part dealing with the oaks was written by Bonpland, and published in 1809. It included treatments of 20 species regarded as new, and one species (*Q. acutifolia*) already known to the authors from Née's description. Bonpland's descriptions, written formally in Latin and repeated in French, are accurate and detailed, and each new species is illustrated. Of the 20 new species, about half are currently regarded as valid taxa; the rest of the names are generally treated as synonyms.[2]

Although this has not been much known, there were two issues of *Plantae Aequinoctiales,* with different pagination. Stafleu (Taxonomic Literature, p. 224. 1967) refers to one of format "grand jésus," the other "grand colombier." In the literature on *Quercus,* most authors have cited pages 24–58. In the Library of the U.S. Department of Agriculture, however, is a copy in which the treatment of *Quercus* runs from page 21 to page 50. Page-numbers corresponding to the descriptions of individual species are 3–7 units smaller than those customarily cited. Thus in the Oaks of Texas (Contr. Texas Res. Found. 1, pt. 3: 63. 1951), *Quercus reticulata* Humb. & Bonpl. is cited as having been published on page 35, whereas Trelease and other authors cite it as from page 40. Apparently the smaller edition is rare in libraries; since the matter came to our attention early in 1969 we have not found another copy either in America or in Europe. In our text below we give the page numbers as found in the large edition, citing the other numbers in brackets immediately following.

In the original printing of the larger edition an error occurred. Page 49 began with the fourth line of the Latin description of *Quercus crassifolia,* the initial part of the treatment of this species and the latter part of the text of *Q. stipularis* having been omitted. A corrected leaf was issued, in which the missing text was supplied, and the complete text made to fit into pages 49 and 50. Copies are known with and without the corrected page, and with both corrected and uncorrected pages.

Recognition of the holotypes of species proposed by Humboldt and Bonpland is not always easy. The problem is complicated in several ways. The specimens of Humboldt and Bonpland, as is well known, occur in two principal series. A small but comprehensive series is to be found in the Willdenow Herbarium at the Botanisches Museum, Berlin-Dahlem (B). This set was given by Humboldt to Willdenow before the

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[1] cf. *Humboldt, Bonpland, Kunth and tropical American botany,* edited by William T. Stearn. 159 pp., map. J. Cramer, Lehre, 1968.

[2] Alexandri de Humboldt et Amati Bonpland Plantae Aequinoctiales . . . in ordinem digessit Amatus Bonpland. Vol. 2, pp. 24–58. *pl. 75–96.* 1809–?1810.

latter's death in 1812. The much larger series, that originally retained by Humboldt, is housed in the Muséum National d'Histoire Naturelle, Paris (P). The types of most species described in *Plantae Aequinoctiales,* and in the *Nova Genera et Species* of Humboldt, Bonpland, and Kunth, are to be sought in Paris. An arbitrarily selected series of specimens has been segregated in Paris as the Humboldt Herbarium, and it has often been assumed that all the types are included in this. We do not find this to be true with respect to *Quercus.* Because of Bonpland's special interest in *Quercus*, he made elaborate notes and sketches pertaining to most species. The specimens (seldom more than one to a species) bearing these notes and sketches are sometimes found in the Humboldt Herbarium, but some are also found among the residual duplicates in the general herbarium at Paris. We take these annotated specimens to be the holotypes wherever they may be located, as they were certainly used by Bonpland in the preparation of descriptions and illustrations for the *Plantae Aequinoctiales.* The types of *Quercus mexicana* and *Q. crassipes,* two names reversed in application by Trelease, were identified by means of Bonpland's annotations in the herbarium.

Trelease examined the oaks of Humboldt and Bonpland, both in Berlin and in Paris. Some of his photographic plates are based on specimens in Berlin, and some on those in Paris. He did not ordinarily give formal preference to one institution or the other in designating types, merely attributing the collections to Bonpland and citing them by number. Muller studied the collections at Paris in June 1958, and those in Berlin in August of the same year.

After the work of Humboldt and Bonpland, significant additions to knowledge of the oak-flora of Mexico and Central America were made by Schlechtendal and Chamisso (1830–32), Bentham (1840–1842), Martens & Galeotti (1843) and Liebmann (1854). In this paper we have not attempted to place all the species described by these authors, merely citing the ones that in our opinion are synonyms of species described by Née or by Humboldt & Bonpland. Muller has studied types (or in some instances isotypes) of most of the names proposed by the above authors, especially at Copenhagen (August, 1950, including most of the types of Liebmann), Brussels (August 1958, including most of the types of Galeotti), and Kew (August 1958, including the types of Bentham).

In forming our opinions as stated below, we have studied the types and other collections listed above, and much additional material, including most of the types of Trelease, in the major European and American herbaria. Muller's private herbarium includes approximately 8,000 specimens of *Quercus.* We have about 2,500 collections of oaks obtained by one or the other of us in the course of field-exploration in Mexico, and these have been particularly important in helping us make our decisions.

The species treated in the present paper are arranged alphabetically for the most part. The system employed by Trelease, that of grouping the species into small named taxa called "series," appears to have merit as an aid to study of the American oaks as a whole, but the number and circumscription of the series remains doubtful, and we usually have not attempted to make formal assignments of individual species to these supra-specific taxa.

**Quercus acutifolia** Née, An. Ci. Nat. 3: 267. 1801; Trel. Mem. Nat. Acad. Sci. 20: 192. *pl. 390,* upper figure. 1924.

Represented in Née's herbarium by four sheets (nos. 25953, 25954, 25955, 152482). Trelease's plate represents a rather typical leaf, from one of these sheets, with 5–6 strong lobe-like teeth on each side. This is a common leaf-form in Guerrero, the type-region, where both *Q. acutifolia* and the sometimes similar *Q. conspersa* Benth. occur. Alphonse DeCandolle (in DC. Prodr. 16, pt. 2: 66. 1864) treated *Q. conspersa* as a variety of *Q. acutifolia,* but the two are best regarded as distinct species. Either may have ovate-lanceolate, long-attenuate and conspicuously glandular leaves broadly rounded at base (as in the type of *Q. acutifolia*), but the acorn-cups in *Q.*

*conspersa* have inrolled margins, and the leaves tend to be more nearly ovate, somewhat rounded toward the acute or acuminate tip, and of noticeably firm texture.

One of the largest series of American oaks, as treated by Trelease, was the *Acutifoliae.* The taxonomy of the group remains to be completely worked out, but the actual number of species included in it appears to be 15 or more. *Quercus xalapensis* Humb. & Bonpl. Pl. Aequin. 2: 24 [21]. *pl. 75.* 1809, a plant of the Atlantic slope of Veracruz, is hardly different from *Q. acutifolia.* Trelease (pp. 192, 229; *pl. 392,* lower figure) designated as type [i.e. lectotype] *Humboldt* (or *Bonpland*) *4467* in the Willdenow Herbarium. This specimen agrees well with what we take to be the actual type, a sheet in the Bonpland collection (i.e. the general herbarium) at Paris.

The following species is evidently closely related to *Q. acutifolia,* but has much larger leaves than those usual in that species, and more copious pubescence. It is contrasted below with *Q. acutifolia* and *Q. conspersa,* the two species with which it is most likely to be confused in western Mexico:

1. Branchlets and petioles densely and persistently yellow-tomentose; leaves (3.5–) 6–10 cm wide, eglandular at maturity, acute or attenuate at the narrow aristate tip, with 10–14 teeth on each side; acorn cup 20–22 mm wide, with erect margins. *Q. uxoris.*
1. Branchlets and petioles at most thinly tomentose, usually soon glabrescent; leaves commonly 3–5 (–10) cm wide, with few or many teeth, often glandular beneath; cup various, 13–18 (–22) mm wide.
   2. Teeth 6–10 (–15) on each side of the leaf; margins of the cup not inrolled. *Q. acutifolia.*
   2. Teeth 1–6 on each side of the leaf; margins of the cup much inrolled. *Q. conspersa.*

**Quercus uxoris** McVaugh, sp. nov., arbor grandis usque ad 25-metralis, 1 m diametro, ramulis 2–4 mm crassis, initio pilis crassiusculis aureis vel fulvis tomentosis, tomento subpersistente, cortice castaneo vel fusco, lenticellis prominulis; gemmae 2–4 mm longae, ovoideae, breviacutae, subglabrae, squamulis interioribus ciliatis; stipulae 10–15 mm longae, lineares vel superiores subfiliformes, scariosae, membranaceae, pilosae, deciduae pro parte maxima ante foliorum maturitatem; folia decidua, maturitate coriacea, demum flavescentia, juvenilia minute glanduloso-granularia et stellato-pubescentia, subtus pilis majoribus erectis, aureis, ca 0.5 mm latis, dense objecta, supra sparse stellata et pilis longis simplicibus dispersis munita; venae majores pilosae, pilis conspersis rectis simplicibus usque ad 1–1.5 mm longis; folia ovata vel obovata usque ad elliptica, (10–) 15–26 cm longa, (3.5–) 6–10 cm lata, plerumque 2.5–3-plo longiora quam latiora, apice angusto aristato acuminata vel attenuata, basi latiuscule rotundata (e.g. foliis ovatis), vel ad basin subacutam angustata (e.g. foliis obovatis in eadem planta); margines utroque latere dentibus 10–14 ascendentibus longiaristatis instructi, inter dentes incrassati et revoluti, ad basin integri; dentes asymmetrici, anguste triangulares, usque ad 1–2 cm alti (aristis 5–10 mm longis inclusis), sinubus profundis curvatis separati (vel dentes breviores, obtusi, marginibus tum aristatis sed inter aristas vix incurvatis); venae laterales utroque latere tot quot dentes, in aristas plerumque terminantes; folii superficies matura dura, nitida, atroviridis, quasi glabra (costae basi excepta), venis majoribus pallidis, convexis sed subimpressis, venulis tenuibus pallidis subelevatis; folii pagina inferioris flavida, stellato-pilosa, epidermide pallide viridi, lucida, papillosa, aliter laevi, venis pallidis, arcte elevatis, venulis convexis, quam venulis superficies conspicuioribus; petioli (8–) 12–30 mm longi, 2–3 mm crassi (tomento subpersistente incluso); amenta staminata 6–12 cm longa, pilosa (pilis pro parte maxima simplicibus), laxe florifera, perianthio late campanulato, 1.5 mm alto, ejus lobis obtusis, longiciliatis, antheris glabris, apiculatis, 1.3 mm longis; flores pistillati juveniles pilosi, geminati, sessiles; cupula (exemplo *Rzedowski 14551*) planiuscula, 20–22 mm lata, ca 8 mm alta, squamis canescentibus, basi parum incrassatis, apicibus erectis, adpressis, late obtuseque triangularibus; glans breve ovoidea, basi truncata, 18–19 mm longa, 16–17 mm lata, cupulam multo superans.

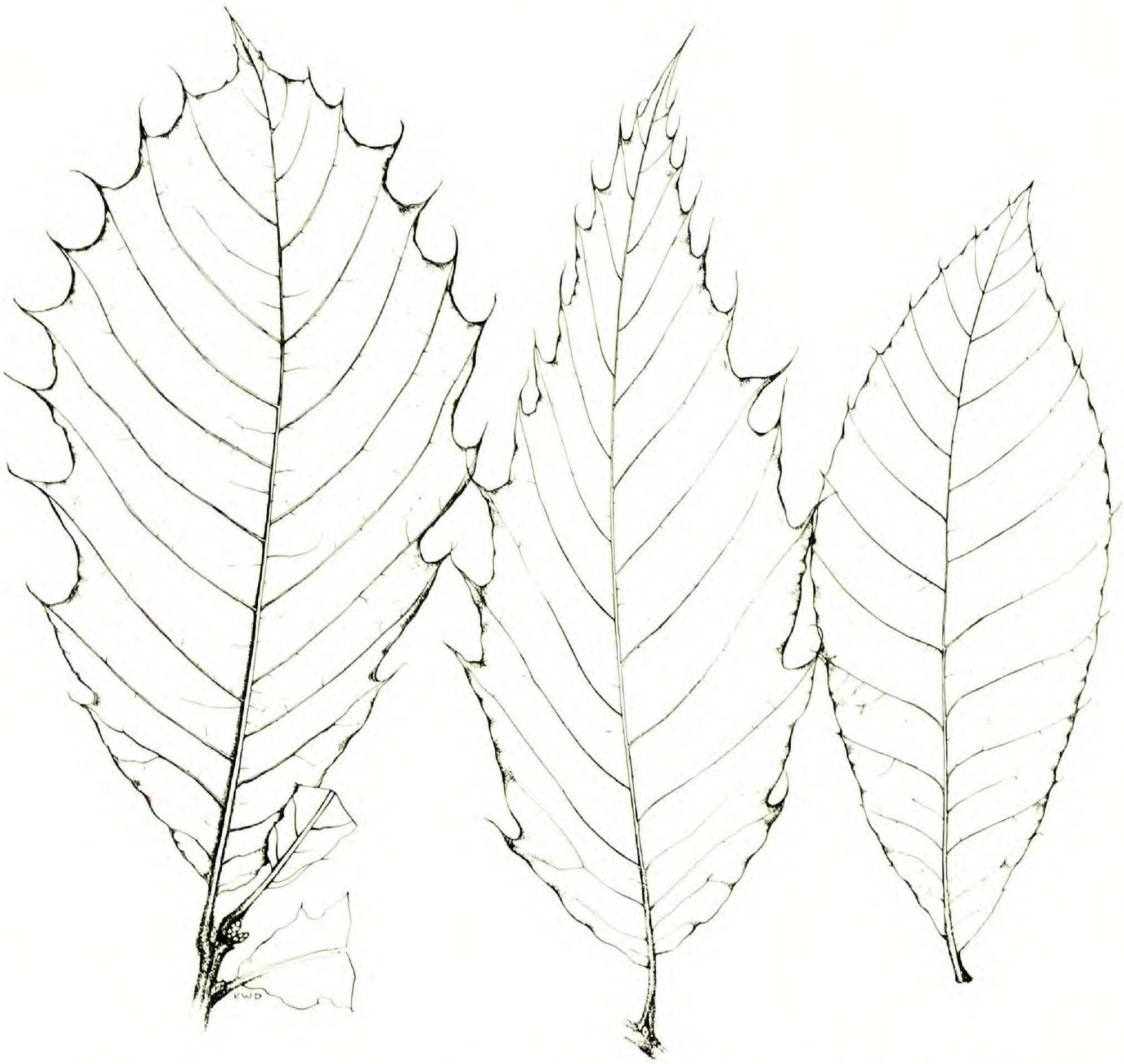

FIG. 64. *Quercus uxoris,* about half natural size. Leaf at right from *Rzedowski & McVaugh 47* (Guerrero), the other figures from the type. Drawn by Karin Douthit.

Species auctoris junioris uxori carissimae Ruth Beall McVaugh, comiti et multorum itinerum mexicanorum socio, dicavimus.

Mexico: on the Pacific Slope of southern Jalisco and Colima, and in the Sierra Madre del Sur of Guerrero, occurring in steep barrancas and on humid wooded hillsides, with pines and other oaks, or with oaks and species of *Prunus, Fraxinus, Magnolia, Carpinus,* and sometimes *Podocarpus,* at elevations of 1200–1700 m.

JALISCO: Above La Cuesta, below the pass to Talpa de Allende, 1200–1500 m, abundant, 16 Oct 1960, *McVaugh 20292* (MICH, type, and isotype; herb. CHM), 22 Nov 1960, *McVaugh 21300* (MICH, herb. CHM); 15–18 km south of Talpa, headwaters of Río de Talpa, *McVaugh 21446* (MICH), *Rzedowski 15067* (ENCB, MICH); above Ahuacapán, 20 km southeast of Autlán, *Rzedowski 14548, 14551* (both ENCB); south-facing foothills 40 km southeast of Autlán, between El Chante and Cuzalapa, *McVaugh 23249* (MICH). COLIMA: Monte de San Antonio, *M. de la Luz Nápoles* (ENCB 772). GUERRERO: 14 km SSW of El Gallo, road to Atoyac, on the southwestern spurs of Cerro Teotepec, approx. 17° 25′ N., 100° 14′ W., *Rzedowski & McVaugh 47* (ENCB, MICH).

**Q. agrifolia** Née, An. Ci. Nat. 3: 271. 1801; Trel. Mem. Nat. Acad. Sci. 20: 206. *pl. 420.* 1924.

There seems no reason to doubt the application of the name of this well known Californian species. The specimen in Née's herbarium is no. 25959.

**Q. ambigua** Humb. & Bonpl. See *Q. diversifolia.*

**Q. candicans** Née, An. Ci. Nat. 3: 277. 1801. *Q. calophylla* Schlecht. & Cham. Linnaea 5: 79. 1830. *Q. alamo* Benth. Pl. Hartw. 55. 1840. *Q. flavida* Liebm. Overs. Dansk. Vidensk. Selsk. Forhandl. 1854: 178. 1854. *Q. acuminata* Mart. & Gal. Bull. Acad. Brux. 10, pt. 1: 217. 1843. *Q. umbrosa* Endl. Gen. Suppl. 4, pt. 2: 26. 1847. *Q. intermedia* Mart. & Gal. Bull. Acad. Brux. 10, pt. 1: 223. 1843.

The type consists of six detached juvenile leaves, obviously the species called *Q. candicans* by Trelease. There seems to be no real distinction between *Q. candicans* and *Q. calophylla* (including the other synonyms listed above, all of which were assigned to *calophylla* by Trelease). See also U.S.D.A. Misc. Publ. 477: 81. 1942, where this synonymy is confirmed.

**Q. castanea** Née, An. Ci. Nat. 3: 276. 1801; Trel. Mem. Nat. Acad. Sci. 20: 178. *pl. 358,* upper fig. 1924. *Q. pulchella* Humb. & Bonpl. Pl. Aequin. 2: 44 [38]. *pl. 88.* 1809. *Q. lanigera* Mart. & Gal. Bull. Acad. Brux. 10, pt. 1: 215. 1843. *Q. tristis* Liebm. Overs. Dansk. Vidensk. Selsk. Forhandl. 1854: 174. 1854. Additional synonyms are *Q. axillaris* Trel., *Q. subcrispata* Trel., *Q. circummontana* Trel., *Q. serrulata* Trel., ?*Q. alamosensis* Trel., *Q. rossii* Trel., *Q. tepoxuchilensis* Trel., *Q. impressa* Trel., *Q. seleri* Trel., *Q. verrucosirama* Trel., *Q. spathulistipula* Trel., *Q. crassivenosa* Trel.

Née's specimens of *Q. castanea* are exactly as described by Trelease, most of the leaves having acute apices. Our concept of *Q. castanea* includes most of what Trelease called Ser. *Castaneae.*

**Q. chrysophylla** Humb. & Bonpl. See *Q. laurina.*

**Q. circinata** Née. See *Q. magnoliifolia.*

**Q. confertifolia** Humb. & Bonpl. See *Q. crassipes.*

**Q. crassifolia** Humb. & Bonpl. Pl. Aequin. 2: 49 [43]. *pl. 91.* 1809; Trel. Mem. Nat. Acad. Sci. 20: 128. *pl. 234,* upper fig. 1924. *Q. stipularis* Humb. & Bonpl. Pl. Aequin. 2: 47 [41]. *pl. 90.* 1809. *Q. brachystachys* Benth. Pl. Hartw. 91. 1842. Additional synonyms are *Q. felipensis* Trel., *Q. moreliana* Trel., *Q. errans* Trel., *Q. chicamolensis* Trel., *Q. orbiculata* Trel., *Q. miguelitensis* Trel.

The type (*s.n.*, in herb. Humboldt, 3 sheets from Chilpancingo), seems to represent the species treated under this name by Trelease. The type of *Q. stipularis* (*s.n.*, in herb. Humboldt, represented by Trelease's plate 242) is the same species. Another sheet labelled *Q. stipularis* (Actopan, in herb. Humboldt, *s.n.*, with manuscript notes by Bonpland) is a juvenile specimen of *Q. crassifolia.* The type of *Q. brachystachys* (*Hartweg 618,* seen at K and BM) is conspecific with the above.

**Q. crassipes** Humb. & Bonpl. Pl. Aequin. 2: 37 [32]. *pl. 83.* 1809. *Q. mexicana* sensu Trelease, not of Humb. & Bonpl. *Q. crassipes* var. *angustifolia* Humb. & Bonpl. Pl. Aequin. 2: 38 [33]. *pl. 84.* 1809. *Q. confertifolia* Humb. & Bonpl. Pl. Aequin. 2: 53 [47]. *pl. 94.* 1809. Additional synonyms are *Q. colimae* Trel., *Q. imbricariaefolia* Trel., *Q. obovalifolia* Trel., *Q. malifolia* Trel.

The type of *Q. crassipes* (in herb. Humboldt., *s.n.,* with manuscript description by Bonpland), and that of *Q. crassipes* var. *angustifolia* (in herb. Humboldt, *s.n.,*), are both specimens of the plant with narrow leaves bullate beneath, treated by Trelease as *Q. mexicana.* The type of *Q. confertifolia* (*Bonpland 4407*, with manuscript description, in Herb. Gen., Paris), is very like the specimens of *Q. crassipes* but only sparingly pubescent.

**Q. depressa** Humb. & Bonpl. Pl. Aequin. 2: 50 [44]. *pl. 92.* 1809. *Q. subavenia* Trel. Mem. Nat. Acad. Sci. 20: 169. *pl. 338,* upper figure. 1924, is a synonym. An isotype of *Q. subavenia (Pringle 8908),* at Paris, has been compared with the type of *Q. depressa (Bonpland 4145* in the general herbarium, at Paris). A specimen *(Humboldt, s.n.)* in the Willdenow herbarium (no. 17621) is evidently a duplicate of the type of *Q. depressa;* it is represented by Trelease's plate 338, lower figure. (The photographs in Trelease's plate 338 were reversed in publication; the top figure, as indicated by comparison with the specimens photographed, represents Pringle's collection of *Q. subavenia,* whereas the lower figure is taken from the isotype of *Q. depressa* in the Willdenow herbarium).

**Q. diversifolia** Née, An. Ci. Nat. 3: 270. 1801. *?Q. ambigua* Humb. & Bonpl. Pl. Aequin. 2: 51 [45]. *pl. 93.* 1809, not *Q. ambigua* Michx. f., 1801. *?Q. bonplandiana* Sweet, Hort. Brit. 370. 1826. *?Q. laeta* Liebm. Overs. Dansk. Vidensk. Selsk. Forhandl. 1854: 179. 1854.

Née's concept of this species may have been derived from more than one source, as he gave the locality as "junto a Chalma y Santa Rosa." These localities are some distance apart, and in somewhat different floristic areas, and it is at least possible that his description of the leaves as "integris aut dentatis" refers to two different species. The plant in his herbarium, however (sheet no. 26468, at Madrid), seems to belong to the alliance of small-leaved white oaks including *Q. laeta, Q. pallescens* Trel., *Q. bipedalis* Trel., *Q. obscura* Trel., and *Q. transmontana* Trel. These are plants with narrowly elliptic to oblong or oblanceolate leaves commonly 2–3 cm wide and 5–9 cm long, sparsely pubescent but essentially eglandular beneath, and peduncles 2–5 (–10) cm long. Superficially some individuals may resemble *Q. obtusata,* but in that species the lower leaf-surface is normally copiously glandular, the leaves 7–15 cm long, and the peduncles longer than in *Q. laeta.*

In Née's specimens the leaves are 3–7 cm long, 1.5–3 cm wide, oblong, obtuse or rounded at base, obtuse at apex, subentire or more commonly coarsely toothed above the middle, glossy and markedly impressed-veiny above, the lower surface yellowish-wooly, the hairs longer, and longer-stalked, than usual in *Q. laeta.* The peduncles are 5–7 cm long.

In the type of *Q. ambigua* (*Bonpland s.n.,* in hb. Humboldt, illustrated in Trelease's pl. 103) the leaves are a little larger than those described for *Q. diversifolia* (3–5 cm wide, 8–10 cm long). In aspect they suggest those of *Q. obtusata,* but the pubescence appears to be that of *Q. laeta* (syntypes *Hartweg 419!* and *Seemann 1971!,* the latter also the type of *Q. obscura*).

To summarize, the plant known as *Q. laeta* Liebm., and lectotypified by *Hartweg 419*, may well be the same as *Q. ambigua* (*Q. bonplandiana* Sweet), but in the latter the leaves are unusually large for *Q. laeta.* An even older name, perhaps for the same taxon, is *Q. diversifolia,* but the foliar pubescence in the type of the latter is somewhat different from that of *Q. laeta.* For the present we prefer to use the more familiar name *laeta* for a rather widely distributed and much-collected species, noting the possibility that when the types of the older names are better understood, *laeta* may have to be abandoned.

If Née's type is not accepted as a basis for supplanting *Q. laeta,* the alternative seems to be to assign it to a taxon that includes *Q. centralis* Trel. Mem. Nat. Acad. Sci. 20: 61. *pl. 60.* 1924, and also *Q. chartacea* Trel. (l.c.) and *Q. sanchez-colini* Martínez, and to take up the name *Q. diversifolia* for this plant of eastern and south-central Mexico.

**Q. elliptica** Née, An. Ci. Nat. 3: 278. 1801. *Q. pubinervis* Mart. & Gal. Bull. Acad. Brux. 10, pt. 1: 211. 1843. *Q. nectandraefolia* Liebm. Overs. Dansk. Vidensk. Selsk. Forhandl. 1854: 175. 1854. *Q. oajacana* Liebm. Overs. Dansk. Vidensk. Selsk.

Forhandl. 1854: 178. 1854. *Q. linguaefolia* Liebm. Overs. Dansk. Vidensk. Selsk. Forhandl. 1854: 180. 1854. Additional synonyms are *Q. langlassei* Trel., *Q. chiquihuitillonis* Trel., *Q. exaristata* Trel., *Q. hondurensis* Trel., *Q. botryocarpa* Trel., *Q. yoroensis* Trel., *Q. atrescentirhachis* Trel., *Q. coccinata* Trel., *Q. peradifolia* Warb.

Trelease failed to place *Q. elliptica* satisfactorily. The species of his series *Nectandraefoliae* and *Oajacanae* are referable to it. His plate 359, upper figure, is said (p. 228) to be a sketch of the type of *Q. elliptica,* and at the same time an illustration representing *Q. castanea* var. *elliptica* Trel. *Q. elliptica* is a very distinct species recognizable by its thick, tomentose twigs, and obovate or elliptic, entire and rather smooth leaves. It is a black oak not closely related to *Q. castanea.* Née's specimen is quite characteristic.

**Q. glaucescens** Humb. & Bonpl. Pl. Aequin. 2: 29 [25]. *pl. 78.* 1809. *Q. chinantlensis* Liebm. Overs. Dansk. Vidensk. Selsk. Forhandl. 1854: 179. 1854. *Q. cuneifolia* Liebm. Overs. Dansk. Vidensk. Selsk. Forhandl. 1854: 182. 1854, not *Q. cuneifolia* Raf., 1838. *Q. pinalensis* Trel. Contr. U.S. Nat. Herb. 23: 179. 1922. *Q. synthetica* Trel. Mem. Nat. Acad. Sci. 20: 151. *pl. 297,* upper figure. 1924. Additional synonyms are *Q. obscurirhachis* Trel., *Q. nigrirhachis* Trel., and *Q. texequitzinae* Trel.

Represented at Paris by *Bonpland 3921,* in the General Herbarium. This is a specimen with somewhat immature leaves bearing the characteristic minute stellate hairs beneath. Trelease published a photograph (his plate 50) of another sheet (at Berlin) of no. 3921, and designated this as type. We agree with Trelease's interpretation of the species, but not with his circumscription of it. He regarded *Q. glaucescens* as the type of the monotypic Ser. *Glaucescentes,* he assigned *Q. chinantlensis* and *Q. pinalensis* (*Q. cuneifolia* Liebm.) to Ser. *Excelsae,* and *Q. synthetica* (*Ghiesbreght 121!,* the type, at Copenhagen) to the black oaks.

*Quercus austrina* Small, Flora S.E. U.S. 353. 1903, appears to be related to *Q. glaucescens,* not to *Q. sinuata* Walt., with which it was erroneously combined by Muller (Contr. Texas Res. Found. 1: 65. 1951). Field-study by Muller, of *Q. austrina* and *Q. glaucescens,* since that writing, has revealed the relationship between them.

**Q. lanceolata** Humb. & Bonpl. See *Q. laurina.*

**Quercus laurina** Humb. & Bonpl. Pl. Aequin. 2: 32 [28]. *pl. 80.* 1809. *Q. lanceolata* Humb. & Bonpl. Pl. Aequin. 2: 34 [29]. *pl. 81.* 1809. *Q. chryosphylla* Humb. & Bonpl. Pl. Aequin. 2: 42 [37]. *pl. 87.* 1809. *Q. tridens* Humb. & Bonpl. Pl. Aequin. 2: 56 [50]. *pl. 96.* 1809. *Q. barbinervis* Benth. Pl. Hartw. 56. 1840. *Q. tlapuxahuensis* A. DC. in DC. Prodr. 16, pt. 2: 29. 1864. *Q. nitens δ major* A.DC. in DC. Prodr. 16, pt. 2: 69. 1864. *Q. ocoteaefolia* Liebm. Dansk. Vidensk. Selsk. Forhandl. 1854: 176. 1854. Additional synonyms are *Q. major* (A.DC.) Trel., *Q. bourgaei* Trel., *Q. roseovenulosa* Trel., *Q. caeruleocarpa* Trel., *Q. treleaseana* Camus.

Trelease treated the above species of Humboldt & Bonpland as members of two series, the *Lanceolatae* (including *Q. lanceolata* and *Q. laurina*), and the *Tridentes* (including *Q. tridens* and *Q. chrysophylla*). The type of *Q. laurina* (herb. Humb. & Bonpl. 4143) represents the species treated by Trelease under this name. The other three species are represented by Bonpland's specimens in the General Herbarium at Paris, as follows:

*Q. lanceolata:* "Inter Moran et Santa Rosa," *Bonpland s.n.* Type and two isotypes, all clearly the same as *Q. laurina. Q. tridens: Bonpland 4061,* a type and 2 isotypes; like *Q. chrysophylla, Q. tridens* is merely a juvenile form of *Q. laurina. Q. chrysophylla: Bonpland 4162,* a type and two isotypes, clearly juvenile *laurina* with heavy golden puberulum except on two mature leaves on one sheet.

**Q. lobata** Née, An. Ci. Nat. 3: 277. 1801; Trel. Mem. Nat. Acad. Sci. 20: 100. *pl. 168.* 1924.

After a brief description in the protologue is the remark by Née, "he visto [solamente] los ramos que de Monterey me traxéron los Sres. Robredo y Esquerra." The specimen in his herbarium (no. 26477), however, is marked "Monte Rey et Nootka." We refer this specimen confidently to the Californian species called *Q. lobata* by Trelease. The application of the name *Q. lobata* Née seems never to have been in doubt. The older name *Q. lobata* Bartram (1791) is a *nomen nudum* (cf. E. D. Merrill, in Bartonia 23: 34. 1945).

**Q. lutea** Née. See *Q. magnoliifolia.*

**Q. macrophylla** Née. See *Q. magnoliifolia.*

**Q. magnoliifolia** ["*magnoliaefolia*"] Née, An. Ci. Nat. 3: 268. 1801. *Q. lutea* Née, An. Ci. Nat. 3: 269. 1801. *Q. circinata* Née, An. Ci. Nat. 3: 272. 1801. *Q. macrophylla* Née, An. Ci. Nat. 3: 274. 1801. *Q. nudinervis* Liebm. Overs. Dansk. Vidensk. Selsk. Forhandl. 1854: 182. 1854. Additional synonyms are *Q. erubescens* Trel., *Q. haematophlebia* Trel., *Q. rubescens* Trel., *Q. tepicana* Trel., *Q. platyphylla* Warb.

The four species described by Née were all from the region between Tixtla and Chilpancingo, Guerrero. His specimens in Madrid indicate that the four names pertain to one and the same species. The type of *Q. magnoliaefolia* (sheet no. 25969) represents the species as understood by Trelease; the twigs show the lenticels described by Née, but the leaves are smaller than usual in the species. The type of *Q. macrophylla* is represented by the drawing reproduced by Trelease as his plate 65, upper figure; this is typical *magnoliifolia,* with twigs quite glabrous (sheet no. 26466). Sheet no. 26472 is to be taken as the type of *Q. circinata,* the description of which it fits in every detail, although it is annotated as "Quercus Prinus Linn. var$^{s}$. lutea." The leaves are typical of *Q. magnoliifolia,* but the twigs are short-tomentose. All that remains of the type of *Q. lutea* are two detached leaves (sheet 152486), these resembling the material of *Q. circinata.*

Alphonse DeCandolle (1864) treated *Q. lutea* and *Q. macrophylla* as varieties of *Q. magnoliifolia,* and *Q. circinata* as a distinct species. Trelease, however, recognized all four as distinct. He mistakenly associated *Q. macrophylla* with *Q. resinosa* Liebm., in a small series called *Macrophyllae,* and contrasted the other three in another series called *Circinatae.* The plant that (following Trelease's treatment) has become well known as *Q. macrophylla* is properly called *Q. resinosa* Liebm. (Overs. Dansk. Vidensk. Selsk. Forhandl. 1854: 182. 1854).

If Née's four names are treated as pertaining to one species, the epithet *magnoliifolia* must be taken up in preference to *lutea* and *macrophylla,* because this choice was made by DeCandolle. We suggest that *circinata* likewise be treated as a synonym of *magnoliifolia.* The spelling *magnoliifolia* is consistent with Rec. 73G of the International Code of Botanical Nomenclature.

**Q. mexicana** Humb. & Bonpl. Pl. Aequin. 2: 35 [30]. *pl. 82.* 1809. *Q. rugulosa* Mart. & Gal. Bull. Acad. Brux. 10, pt. 1: 209. 1843. *Q. mexicana* f. *bonplandii* Trel. Mem. Nat. Acad. Sci. 20: 174. 1924. *Q. pablillensis* C.H. Mull. Amer. Midl. Nat. 27: 477. 1942.

The type of *Q. mexicana* (Herb. Humboldt, no. 4060, two sheets, one with manuscript description by Bonpland) is exactly what has been called *Q. rugulosa* by all authors, including Trelease. A third sheet of the same number, taken by Trelease (p. 174) to be the type of *Q. mexicana,* is a mixture of *Q. rugulosa* [i.e. *mexicana*] and *Q. crassipes.* Possibly as a result of the mixing of *Q. crassipes* and the true *Q. mexicana* on some sheets in the Humboldt and Bonpland collection, Trelease described and illustrated both *crassipes* and *mexicana* from specimens of the former. The type of *Q. rugulosa* (*Galeotti 116,* seen at Brussels) is clearly *Q. mexicana,* as is also the type of *Q. pablillensis.*

**Q. microphylla** Née, An. Ci. Nat. 3: 264. 1801; Trel. Mem. Nat. Acad. Sci. 20: 82. *pl. 119,* upper figure. 1924. *Q. striatula* Trel. Mem. Nat. Acad. Sci. 20: 93. *pl. 151, 152.* 1924.

The type of *Q. microphylla* (MA 26469) is a specimen from Guanajuato. *Q. striatula,* described from Durango and adjacent Nayarit and Zacatecas, seems to be conspecific.

**Q. obtusata** Humb. & Bonpl. Pl. Aequin. 2: 26 [23]. *pl. 76.* 1809. *Q. pandurata* Humb. & Bonpl. Pl. Aequin. 2: 28 [24]. *pl. 77.* 1809. *Q. spicata* Humb. & Bonpl. Pl. Aequin. 2: 46 [40]. *pl. 89.* 1809. *Q. hartwegi* Benth. Pl. Hartw. 56. 1840. *Q. obtusata β pandurata* (Humb. & Bonpl.) A.DC. in DC. Prodr. 16, pt. 2: 27. 1864. *Q. obtusata γ Hartwegi* (Benth.) A.DC. in DC. Prodr. 16, pt. 2: 27. 1864. *Q. rugosa* sensu Trel. Mem. Nat. Acad. Sci. 20: 75. *pl. 101, 102.* 1924, not *Q. rugosa* Née. Additional synonyms are *Q. panduriformis* Trel., *Q. alvarezensis* Trel., *Q. crenatifolia* Trel., *Q. atriglans* Warb., *Q. warburgii* A. Camus.

The types of *Q. obtusata* and *Q. pandurata* certainly represent the same species, as supposed by Alphonse DeCandolle and by Trelease. *Bonpland 4061,* the type of *Q. spicata,* illustrated by Trelease (his plate 102), seems clearly the same, although he referred it to the synonymy of *Q. rugosa* Née. Traditionally *Q. hartwegii* Benth. has been distinguished from *Q. obtusata* by the somewhat larger size of the acorns, but in large series of specimens from western Mexico we find this feature is not distinctive.

**Q. pandurata** Humb. & Bonpl. See *Q. obtusata.*

**Q. peduncularis** Née, An. Ci. Nat. 3: 270. 1801; Trel. Mem. Nat. Acad. Sci. 20: 69. *pl. 83.* 1924. *Q. tomentosa* Willd. Sp. Pl. 4: 437. 1805. *Q. callosa* Benth. Pl. Hartw. 91. 1842. *Q. affinis* Mart. & Gal. Bull. Acad. Brux. 10, pt. 1: 222. 1843, not *Q. affinis* Schweidw. 1837. *Q. tomentosa α communis* A.DC. in DC. Prodr. 16, pt. 2: 33. 1864. *Q. tomentosa γ abbreviata* A.DC. in DC. Prodr. 16, pt. 2: 33. 1864. *Q. martensiana* Trel. Contr. U.S. Nat. Herb. 23: 182. 1922. *Q. pilicaulis* Trel. Mem. Nat. Acad. Sci. 20: 67, as to type. 1924. *Q. barbanthera* Trel. Mem. Nat. Acad. Sci. 20: 68. 1924. *Q. dolichopus* E. F. Warb. Kew Bull. 1939: 87. 1939.

This is a distinctive species, correctly but too narrowly interpreted by Trelease. *Q. martensiana* (= *Q. affinis* Mart. & Gal.) belongs with *Q. peduncularis* rather than among the *Prinopses* where Trelease placed it. The type of *peduncularis* evidently represents the species shown in Trelease's plate 83, and in U.S.D.A. Misc. Publ. 477, *pl. 35, 36.* 1942.

**Q. pulchella** Humb. & Bonpl. See *Q. castanea.*

**Q. repanda** Humb. & Bonpl. Pl. Aequin. 2: 31 [27]. *pl. 79.* 1809. *Q. revoluta* Trel. Mem. Nat. Acad. Sci. 20: 78. *pl. 111, 112.* 1924. *Q. lecomteana* Trel. Mem. Nat. Acad. Sci. 20: 81. *pl. 115.* 1924. *Q. subtriloba* Trel. Mem. Nat. Acad. Sci. 20: 81. *pl. 118.* 1924.

The type appears to be no. 4081 in the herbarium of Humboldt & Bonpland; it bears Bonpland's manuscript description. Trelease assigned *Q. repanda* to Ser. *Microphyllae,* and divided the above synonyms between two other series.

**Q. reticulata** Humb. & Bonpl. See *Q. rugosa.*

**Q. rugosa** Née, An. Ci. Nat. 3: 275. 1801. *Q. reticulata* Humb. & Bonpl. Pl. Aequin. 2: 40 [35]. *pl. 86.* 1809. *Q. decipiens* Mart. & Gal. Bull. Acad. Brux. 10, pt. 1: 214. 1843. The synonymy also includes most of the species assigned by Trelease to Ser. *Reticulatae,* except *Q. bonplandiana* Sweet (= *Q. ambigua* Humb. & Bonpl.), which is a synonym of *Q. diversifolia* Née, and *Q. alvarezensis* Trel., which is a synonym of *Q. obtusata.* Trelease included *Q. spicata* Humb. & Bonpl. among the

synonyms of *Q. rugosa,* but the type of *Q. spicata (Herb. Humb. & Bonpl. no. 4061)* is clearly the same as *Q. obtusata* Humb. & Bonpl.

**Q. salicifolia** Née, An. Ci. Nat. 3: 265. 1801; Trel. Mem. Nat. Acad. Sci. 20: 154. *pl. 301,* upper fig. 1924. *Q. tahuasalana* Trel. Mem. Nat. Acad. Sci. 20: 154. *pl. 302,* upper fig. 1924. *?Q. acapulcensis* Trel. Mem. Nat. Acad. Sci. 20: 153. *pl. 302,* lower fig. 1924.

The type of *Q. salicifolia* (MA 25957) is evidently the species treated by Trelease under this name. The type of *Q. tahuasalana* is certainly conspecific; the acorn-differences noted by Trelease are inconsequential. The figures of *Q. tahuasalana* and *Q. acapulcensis* are interchanged in Trelease's plate 302, whereas the legends are correctly placed. The type of *Q. tahuasalana (Langlassé 211),* while correctly cited in the explanation of the plate, is erroneously given as no. 217 in the text. Broad-leaved forms referable to *Q. acapulcensis* are found from Jalisco to Guerrero, as are many forms intermediate between the broad- and narrow-leaved forms. These are closely associated in the field with *Q. salicifolia,* and there appear to be no other significant differences between the latter and *Q. acapulcensis.*

**Q. sideroxyla** Humb. & Bonpl. Pl. Aequin. 2: 39 [34]. *pl. 85.* 1809. *Q. omissa* A.DC. in DC. Prodr. 16, pt. 2: 28. 1864.

In the herbarium at Paris are three sheets of *Q. sideroxyla.* One sheet (*s.n.,* in herb. Humboldt), from Santa Rosa, was taken by Trelease to be the type, and illustrated by him (p. 169, *pl. 339,* upper figure). The plant is *Q. eduardii* Trel. The remaining sheets of *Q. sideroxyla* (under no. 4219) are in the general herbarium. One sheet (labelled as from Santa Rosa) represents *Q. eduardii.* The other sheet is labelled as from Villalpando (the type-locality), and fits both the illustration and description ("folia . . . subtus exilissimo tomento canescentia"). Evidently this sheet is the actual type. It represents the species later described as *Q. omissa.*

Evidently Humboldt and Bonpland confused under the one name two species, one collected at Santa Rosa ("Nous en avons d'abord trouvé quelques pieds assez beaux dans le voisinage de Santa Rosa") and the other later at Villalpando ("Quelques temps après, allant visiter les mines de Villalpando, nous en trouvâmes un plus grand nombre"). In the formal part of the protologue of *Q. sideroxyla,* the type-locality is given as "in Nova Hispania, prope Villalpando." Trelease selected a specimen of *Q. eduardii* from Santa Rosa as the type, but as noted above, and as shown in his plate 339, this plant is apparently not the one on which Bonpland's description and plate were primarily based.

**Q. spicata** Humb. & Bonpl. See *Q. obtusata.*

**Q. splendens** Née, An. Ci. Nat. 3: 275. 1801.

This was long a doubtful species, because Née's description was based entirely on specimens with half-grown leaves, that he collected near Tixtla, Guerrero, in April, 1791. Recent collections from the type locality (*Muller 9169, 9170*) provide immature leaves that match Née's own specimens precisely, and mature leaves and fruits (all attached) by which the species can be identified. It is clear that *Q. splendens* is a white oak closely related to *Q. sororia* Liebm. and *Q. polymorpha* Schlecht. & Cham. Trelease placed *Q. splendens* among the black oaks, on the basis of a sketch of the type (his plate 252, upper figure). At the same time Trelease placed *Q. polymorpha* and *Q. sororia* in two closely associated series of white oaks, *Polymorphae* and *Glaucoideae.* A better course seems to be the inclusion of all three species in the one series, *Polymorphae.*

**Q. stipularis** Humb. & Bonpl. See *Q. crassifolia.*

**Q. tridens** Humb. & Bonpl. See *Q. laurina.*


FIG. 65. *Quercus pallidifolia*, about 7/10 natural size. Photograph of the holotype.

## Addendum

One of the minor mysteries, among our legacies from the earliest explorers, involves the absence from their collections of some very common species. Thus Née did not include *Quercus mexicana* or *Q. crassipes* among his copious collections, although both species are abundant over much of the area he traversed. Similarly, both Née and Bonpland failed to collect *Q. glaucoides* Mart. & Gal., although this is one of the most common small oaks over much of their areas. One may speculate that the collectors observed these species in the field but failed to make specimens because they misinterpreted what they saw, assuming that the plants represented variants of species they had already collected. Another possibility is that Née, at least, may have collected specimens and considered them in his concepts of such variable species as (e.g.) *Q. diversifolia,* and eventually discarded them in favor of the types which he retained.

Many new species related to *Quercus glaucoides* have been proposed and named since *Q. glaucoides* itself was described in 1843, but most of the novelties are taxa of little or no significance. Only a few highly localized populations, such as *Q. microlepis* Trel. & Muell., and *Q. perpallida* Trel. appear to be really specifically distinct. Another such localized population, of even greater distinctness, is described below:

**Quercus pallidifolia** C. H. Muller, sp. nov.; arbor usque ad 10-metralis, ramulis 3–5 mm crassis, glabris, pruinosis, russis, lenticellis pallidis prominentibus; ramuli anno tertio vel quarto corticem pallidam mollem squamosam evolventes; gemmae subsphaericae 2–2.5 mm longae et fere aequilatae, glabrae; stipulae 2–3 mm longae, anguste ligulatae, glabrae; folia vix decidua, 10–20 cm longa, 6–14 cm lata, obovata vel late spathulata, apice late rotundata, marginibus obscure undulata, basi plerumque valde angustata, cordato-auriculata, supra impolita vel paullo lucentia, perglabra vel secus costam pruinosam parce puberula; folia subtus impolita, glabra vel minute puberula et pilis stellatis minutis sparsissimis instructa; epidermis microscopice pallideque papillosa, papillis convexis ut videtur ceraceis confertis, inter venulas parenchymatem omnino tegentibus; venae principales utroque latere ca 10–12, supra vix elevatae, subtus reticulumque venularum prominens; petioli 2–5 (–8) mm longi, rufescentes, valde pruinosi; flores fructusque non vidi.

Specimens examined: SINALOA: Mpio. Sinaloa y Vela, above rancho Laureles, 6 miles NW of Los Hornos, along road from Mocorito to Surutato, Sierra Surutato, elev. ca 1600 m, 30 Sep 1970, *D. E. Breedlove & R. F. Thorne 18164* (herb. CHM); Bacayopa, Choix, Nov 1951, *Ramón Castro 2227* (herb. CHM). NAYARIT: Los Jazmines, Santa María del Oro, 20 Sep 1951, Roberto Pérez C. *2135* (herb. CHM, type; MICH, isotype).

The vegetative characters of this species constitute a unique feature, so that without fruit it is difficult to assign to it a close relationship. The epidermal characters are suggestive of *Q. germana* Schl. & Cham., to which *Q. pallidifolia* is basically unrelated, and from which it is readily distinguished by its uniformly obovate leaves. The glabrous twigs and obscurely undulate margins of the obovate leaves are reminiscent of those of *Q. magnoliifolia* Née, which lacks the epidermal peculiarities of *Q. pallidifolia* and is otherwise unrelated to it. The epidermal characters of *Q. pallidifolia* are more or less suggested in *Q. glaucoides* Mart. & Gal., in which large obovate leaves are not known. The relationship of *Q. pallidifolia* is perhaps closest to *Q. glaucoides.*